

APPLICATION FAQs – 2017-048J

Milling process causes physical damage to a proportion of the starch granules, thereby altering the functional properties of the wheat flour. A high level of damaged starch results in firm and sticky dough, sticky crumb, low bread loaf volume, browning crust and firm bread crumb. The effect of damaged starch on dough rheological properties was investigated using the Alveolab. This note summarizes the main findings of the work.



Q1. CAN DAMAGED STARCH CONTENT BE EVALUATED WITH THE ALVEOLAB?

Yes. The Alveolab is perfectly suited to evaluate the impact of damaged starch on dough rheology (Figure 1a).

Q2. WHAT ARE THE MAJOR CHANGES INDUCED BY THE INCREASE OF DAMAGED STARCH CONTENT ON ALVEOGRAPH RESULTS?

The increase of the amount of damaged starch results in a tougher dough, associated with a decrease in Alveograph deformation energy (W) and extensibility (L), while an increase of dough tenacity (P) (Figure 1b, 1c and 1d).

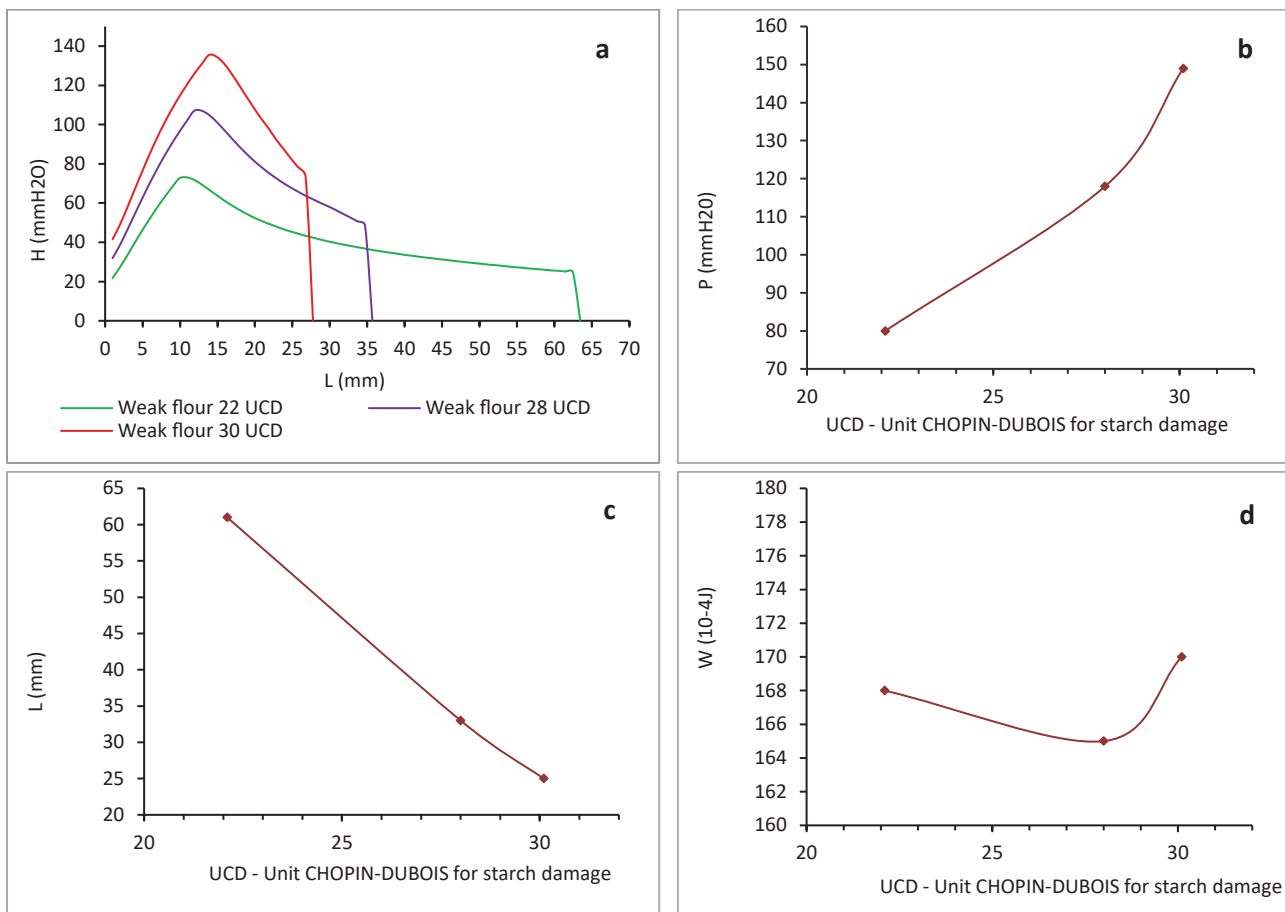


Figure 1: Alveolab curves and parameters of control and damaged wheat starch flours. a: Alveograph curves of weak flour; b, c and d: Tenacity (P), extensibility (L) and deformation energy (W), respectively.

1- A. E. Leon, G. N. Barrera, G. T. Perez, P. D. Ribotta, C. M. Rosell. Effect of damaged starch levels on flour-thermal behavior and bread staling. Bakery Eur Food Res Technol (2006) 224: 187–192.